

EXPLAINING INCREASING PERFORMANCE GAPS BY TEST-TAKING EFFORT IN A LONGITUDINAL LARGE-SCALE ASSESSMENT STUDY IN FINLAND

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It is a widely acknowledged problem that reduced effort may influence the results of low-stakes educational assessments. For example, increasing gender differences in some countries may be partially due to the greater effort girls put in their schoolwork. Low performers may underperform in the assessment situation by not doing their best when facing tasks that look demanding. Measures for effort have been developed also earlier, but until the implementation of computer-based assessments (CBA) they have been based on self-reports. This is relatively unreliable and it has been claimed that effort should be evaluated through log data analysis of time investment instead. The aim of this study is to test whether the interplay of self-reported effort and time investment could explain the increasing gender gap in performance and clarify why pupils in need of support are falling behind in their performance over time. All seventh graders of the Helsinki metropolitan area participated in the study in 2011 and again in the ninth grade in 2014. The data of pupils providing data in both data collections were included in the present study (N=7,052). The mean age of the students at the ninth grade was 15.9 years (SD=.43). We assessed pupils' quantitative reasoning skills by seven cognitive items and self-reported effort by three items. Time on task was extracted from the log files of CBA. Self-reported gender (49% girls) and teacher-reported support/special education needs (N=1,162) were used as dummy-coded background variables. We applied structural equation modelling in Mplus 7.2. After controlling for measurement invariance across the two time points, two models were compared, one with gender and support needs as predictors and another with self-reported effort and time on task as mediators. Fitting the first model to the data showed that there was a small gender difference in favour of girls in the initial quantitative reasoning skills. The difference between pupils with support needs and others was larger. There were more boys than girls who needed support. The gender difference slightly increased over time, and regarding support needs the incremental effect was somewhat larger. The results of the second model showed that time on task mediated the effect of prior abilities on later performance. Girls invested more time and also reported slightly higher effort in schoolwork. Pupils with support needs spent a little less time on tasks and reported slightly lower effort in schoolwork. Time on task and self-reported effort fully mediated the gender effect on the ninth grade performance and there was a partial mediation in regard to support needs. It was concluded that the gender gap always observed in educational assessment studies in Finland is a matter of effort. However, the increasing gap related to support needs cannot be explained by reduced effort and further research is needed to address the problem in detail.